SERVICE MANUAL & PARTS LIST (with price)

SF-7900(LX-522)

OCT. 1994

SF-7900

INDEX

CASIO®

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SPECIFICATIONS

Main modes: Telephone Directory, Business Card Library, Memo, Schedule Keeper, Expense, Reminder, Calendar, Home Time, World Time and Calculator

Data storage: Storage and recall of telephone, business card, memo, schedule, expense, reminder data, calendar display, secret area; editing; memory status display

Clock: World Time; reminder alarm; schedule alarm; daily alarm; accuracy under normal temperatures: ±3 seconds average

Calculation: 12-digit arithmetic calculations; arithemetic constants (+, –, ×, ÷); independent memory; percentages; square roots; 24-digit approximations; date calculations; other mixed calculations

General:

Display element: 16-column × 8-line LCD
Memory capacity: 128kB (103436 bytes)
Main component: LSI
Power supply: 3 lithium batteries (CR2032)
Power consumption: 0.07 W
Battery life: Approximately 170 hours continuous operation in Telephone Directory; approximately 130 hours repeating one minute of input and 10 minutes of display in Telephone Directory; approximately 12 months for memory back up
Auto power off: Approximately 6 minutes after last key operation
Operating temperature: 0°C ~ 40°C (32°F ~ 104°F)
Dimensions:
Unfolded: 9.55H × 144W × 155D mm ($^{3}/_{8}$"H × 5 $^{11}/_{16}$"W × 6 $^{1}/_{8}$"D)
Folded: 15.95H × 144W × 77.5D mm ($^{5}/_{8}$"H × 5 $^{11}/_{16}$"W × 3 $^{1}/_{16}$"D)
Weight: 124g (4.4 oz.)

• Design and specifications are subject to change without notice.

Current consumption:

Power switch	TYP. [μA]	MAX [μA]
OFF	11.7	37.1
ON	1,670.0	13,711.0
ON (Operating)	4,520.0	16,645.0

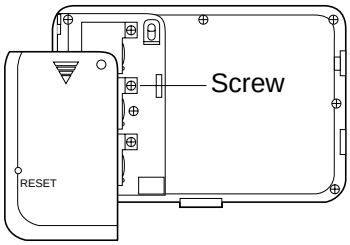
TO REPLACE THE BATTERY

To replace the batteries

1. Loosen the screw on the back of the SF unit that holds the battery compartment cover in place, and remove the cover.

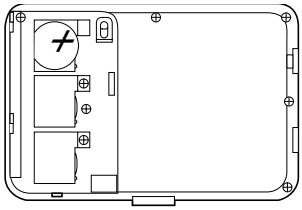
Caution

In the next step, be sure to remove only one battery at a time. Otherwise, you will lose all data stored in memory.



2. Loosen the screw that secures one of the three battery holders in place and remove the battery holder.

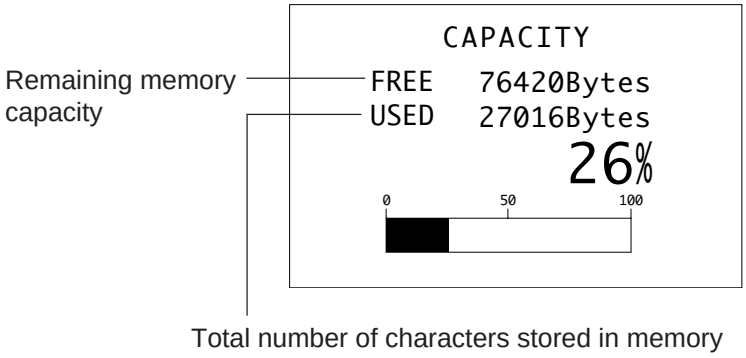
3. Replace the old battery with a new one, making sure that the positive (+) side of the new battery is facing up (so you can see it).



4. Replace the battery holder and secure it by tightening its screw.

TO CHECK THE MEMORY CAPACITY

Hold down CAPA to display a screen that shows the current memory status. To clear the memory status display, release CAPA .



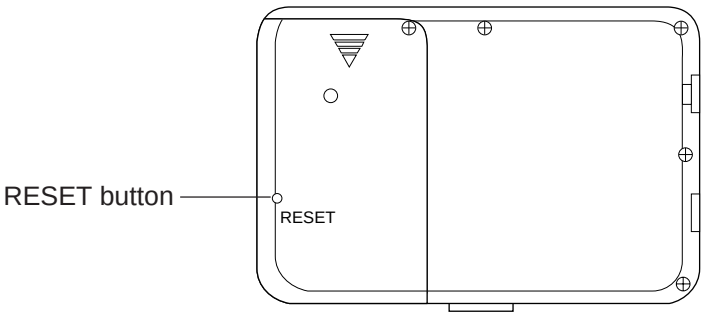
ERROR MESSAGE

Message	Meaning	Action
DATA ITEM NOT FOUND! NO DATA IN MEMORY!	Search operation attempted when no data is stored in memory.	Current search operation cannot be performed.
DATA ITEM NOT FOUND!	Data specified in search operation does not exist in memory.	Change specification or cancel search.
MEMORY FULL!	No more room in memory for storage of data.	Delete unnecessary data items from memory.
ALARM TIME ALREADY USED!	Attempt to set a Schedule Keeper alarm time that is already used for another entry.	Set a different alarm time or change the existing alarm time to another one.
ALARM TIME ALREADY PASSED!	Attempt to set a Schedule Keeper alarm time for a time/date that is already passed.	Set a different alarm time (for a future time/date.)
SECRET DATA!	Alarm for a secret memory area data item is sounding.	Enter the secret memory area to view details of the alarm.
PASSWORD MISMATCH!	Attempt to enter the secret memory area using a password that does not match the one preset for the secret area.	Use the correct password.
TRANSMIT ERROR!	Error during data communications.	Cancel the data communications operation and try again.
STOPPED!		
DATA ERROR! CONSULT THE OWNER'S MANUAL!	Data corrupted by strong impact, electrostatic charge, etc.	See page 11 of the owner's manual.
SAME TYPE ALREADY USED!	Attempt to store a label that is identical to one already stored.	Use a different label.

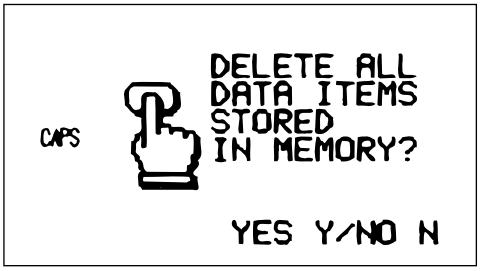
TO RESET THE SF UNIT'S MEMORY

The following procedure erases all data stored in the memory of the SF unit.
Perform the following operation only when you want to delete all data and initialize the settings of the SF unit.
Remember – you should always keep copies of important data by writing it down, by transferring it to a personal computer or other SF unit.

To reset the SF Unit's memory



1. Switch on power and press the **RESET** button with a thin, pointed object.



Warning!
The next step deletes all data stored in the SF unit's memory. Make sure that you really want to delete the data before you continue!

2. Press [Y] to reset the memory and delete all data or [N] to abort the reset operation without deleting anything.

Following the reset operation described above, the Home Time display appears and the SF unit settings are initialized as noted below.

Home Time:	12-hour format
	JAN/1/1995
	AM/12:00 00
World Time:	Washington D.C.
Daily Alarm:	12:00 PM
Sound:	Schedule alarm → ON
	Reminder alarm → ON
	Daily alarm → OFF
	Key → ON
Character input:	CAPS

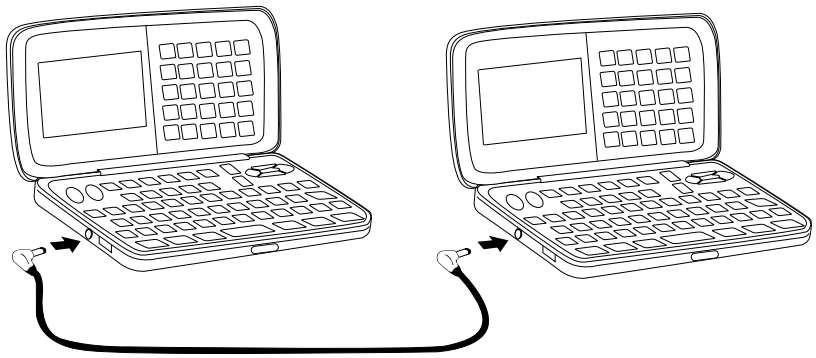
TO SAVE THE DATA TO ANOTHER UNIT

SF-7900 can transfer customers data to another SF-7900 with memory protection only when replacing the LCD or the outer case.

How to transfer the data

* Before connecting the cable (SB-60 or SB-62), be sure to reset the slave unit to clear all data.

1) Turn off the power switch and connect the two units using the cable (SB-60 or SB-62) as shown in the drawing.



2) Turn on the power switch of both units.

3) The slave unit must be set the date of Feb. 3rd, 1901 into the memory under the calculator mode.

Operation: [ON] (CLEAR) [CAL] [1] [DATE] [2] [DATE] [3] [DATE] [M+]

If you don't set the date, the "PASSWORD" isn't transferred to the slave unit.

4) Check the hardware parameters, and if the units have another condition, reset as follows.

To change the hardware parameters, press the [◁], [▷], [△] and [▽] cursol keys.

To set the hardware parameters, press the [SET] key.

[TEL] [FUNCTION] [FUNCTION] [4] [3]

```
        SET UP
PARITY          NONE
BIT LENGTH         7
BPS             9600
```

5) Set up the slave unit.

1 While in the Calendar Display, Telephone Directory, Business Card Library, Memo Mode, or Schedule Keeper, press the [FUNCTION] key followed by [4] to select " DATA COMM", and the following menu appears.

[TEL] [FUNCTION] [4]

```
1 SEND
2 RECEIVE
3 PRINT
4 SET UP
```

2 Press [2] to select "RECEIVE" and the following display appears to indicate that the slave unit is ready to receive data.

[2]

```
DATA   RECEIVE OK

       TO STOP
     PRESS [ESC]
```

6) Set up the customer's unit.

1 While the transmitting unit is in the Calendar Display, Telephone Directory, Business Card Library, Memo Mode, or Schedule Keeper, press the [FUNCTION] key followed by [4] to select "DATA COMM", and the following menu appears.

[TEL] [FUNCTION] [4]

```
1 SEND
2 RECEIVE
3 PRINT
4 SET UP
```

2 Press [1] to select "SEND" and the following menu appears.

[1]

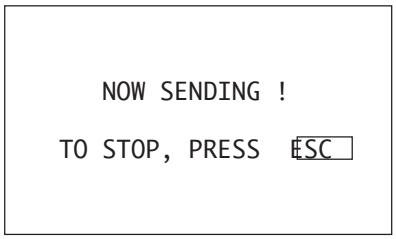
```
SEND
1 ONE ITEM
2 MODE DATA
3 ALL DATA
```

3 Press [3] to select "ALL DATA". The following display appears to confirm if you wish to proceed.

[3]

4 Press the [SET] key to proceed with the data transmission, or press [ESC] if you wish to cancel.

[SET]

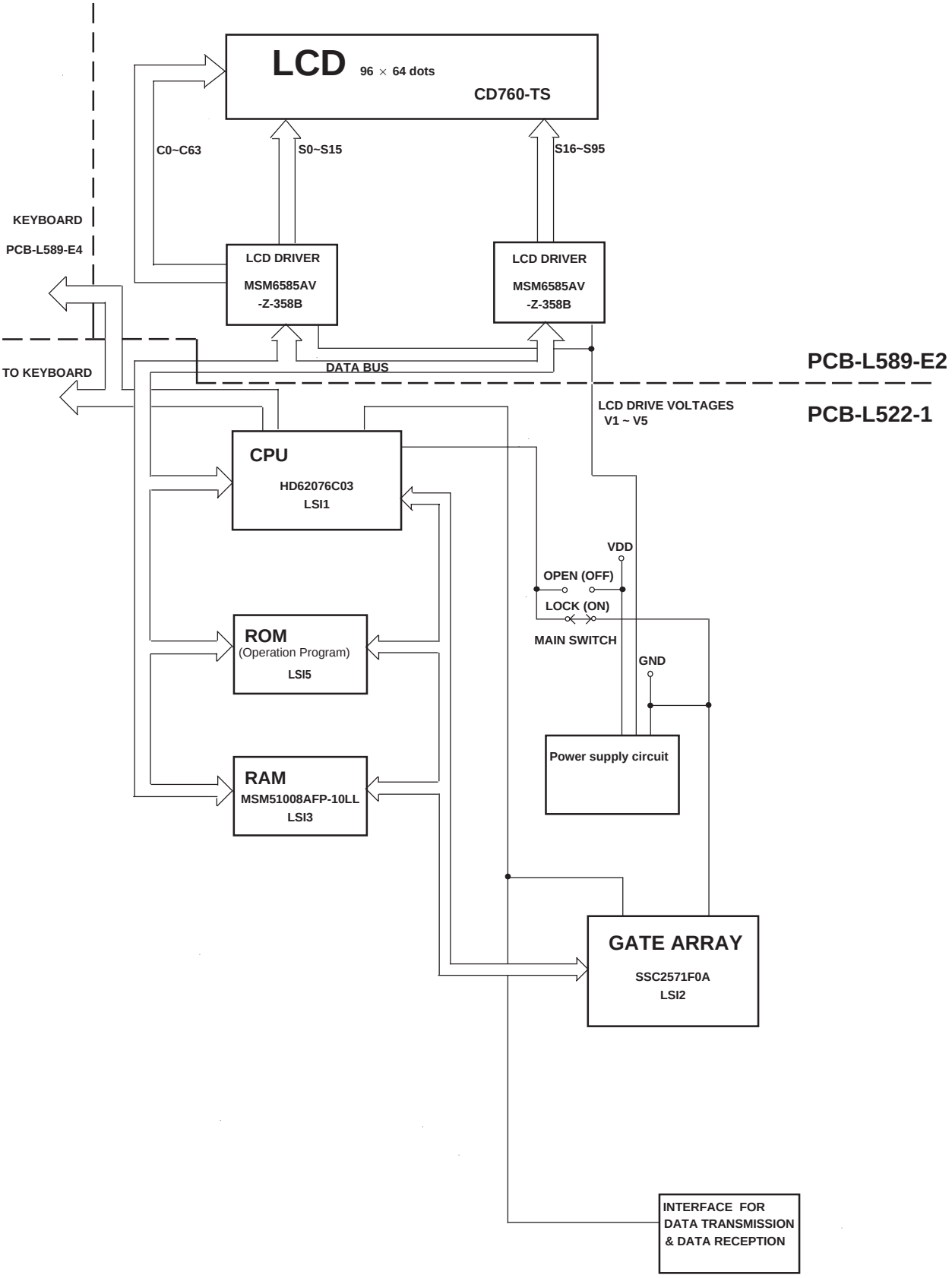


Data are transmitted in the sequence of Telephone Directory data, Memo data, Reminder data, Schedule Keeper data and Calendar data.

* The following messages appear on the display of the receiving unit when a problem occurs during data communications. All data transferred up to display of the message is retained in memory, but data communication is terminated.
  If one of the following error messages appear, press the [TEL], [MEMO], [SCHEDULE], [HOME/WORLD], [REMINDER], [CAL], [CALENDAR] keys, to clear the error message. Then, take corrective action and try data communication again.

Message	Meaning	Action
TRANSMIT ERROR! STOPPED!	Error during data communications.	Cancel the data communications operation and try again.
DATA ERROR! CONSULT THE OWNER'S MANUAL!	Data corrupted by strong impact, electrostatic charge, etc.	See page 9 of the owner's manual.

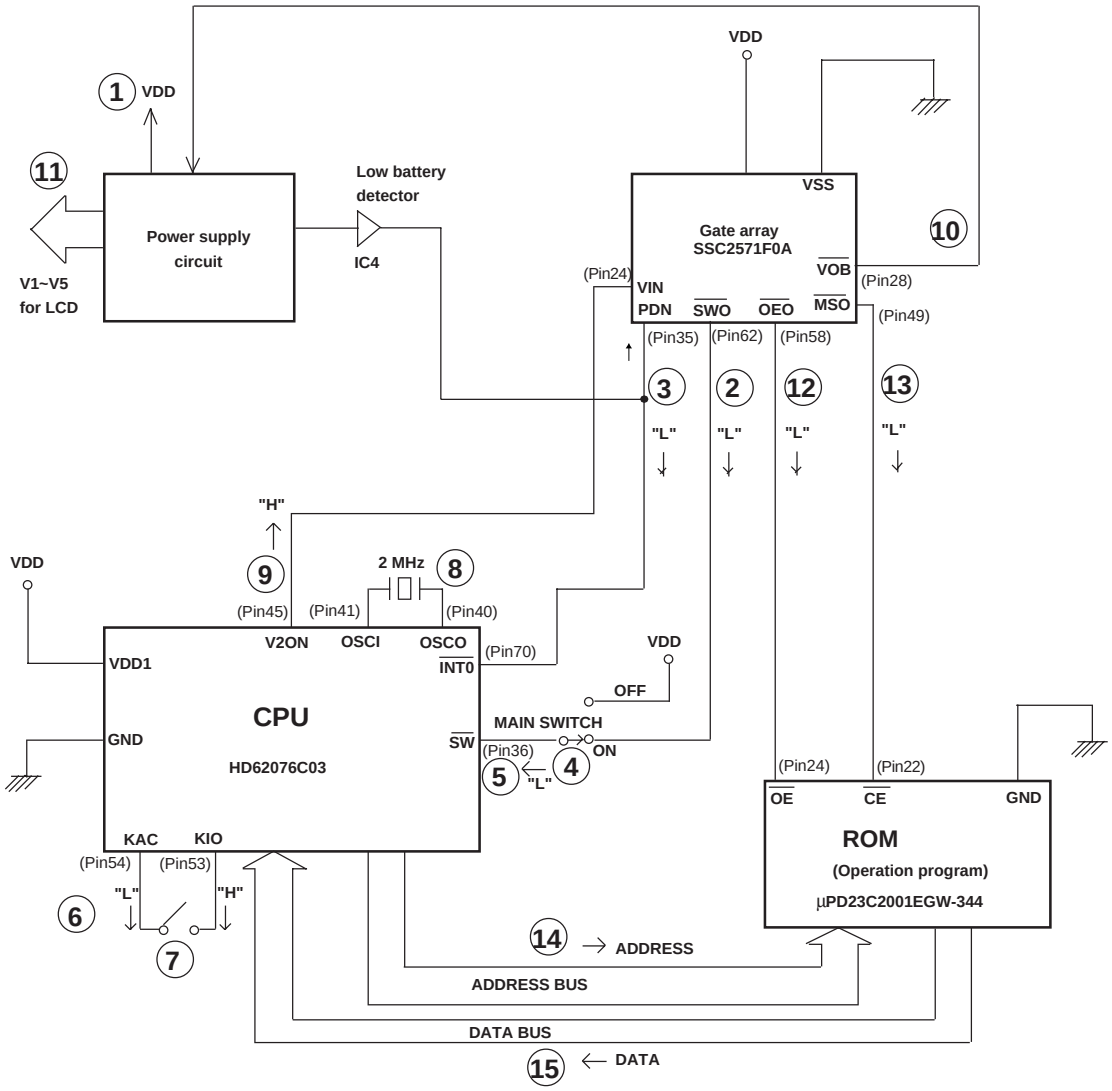
BLOCK DIAGRAM



CIRCUIT EXPLANATIONS

System chart

The circuitry operates in the following order:



1. Supply 5V to VDD1 and VDD2.
2. Output "L" from $\overline{\text{SWO}}$ terminal.
3. Output "L" from IC4 and Q5 terminal.
4. Main switch ON.
5. Input "L" to $\overline{\text{SW}}$ terminal.
6. Input "L" from KAC terminal.
7. Push power on button switch.
8. CPU oscillation is generated.
9. Output "H" from V2ON terminal.
10. Output "L" from $\overline{\text{VOB}}$ terminal.
11. Output all LCD drive voltages.
12. Gate array sends ROM output enable signal to $\overline{\text{OE}}$ terminal.
13. Gate array sends ROM Chip enable signal to $\overline{\text{CE}}$ terminal.
14. CPU sends address to ROM.
15. CPU receives data from ROM.

Power supply circuit

1) Power supply circuit for CPU, GATE ARRAY and RAMs.

When the main batteries are set, the voltage (9V) is applied to the terminal VDD1 of CPU (LSI1), GATE ARRAY (LSI2) and RAM (LSI4).
When IC2 receives the voltage, it provides 4V to the GND lines from the terminal OUT (Pin No.1).

2) Main switch

The CPU (LSI1) detects the informations of the Main switch by the terminal SW (Pin No.36) from the SWO signal of the GATE ARRAY (LSI2).

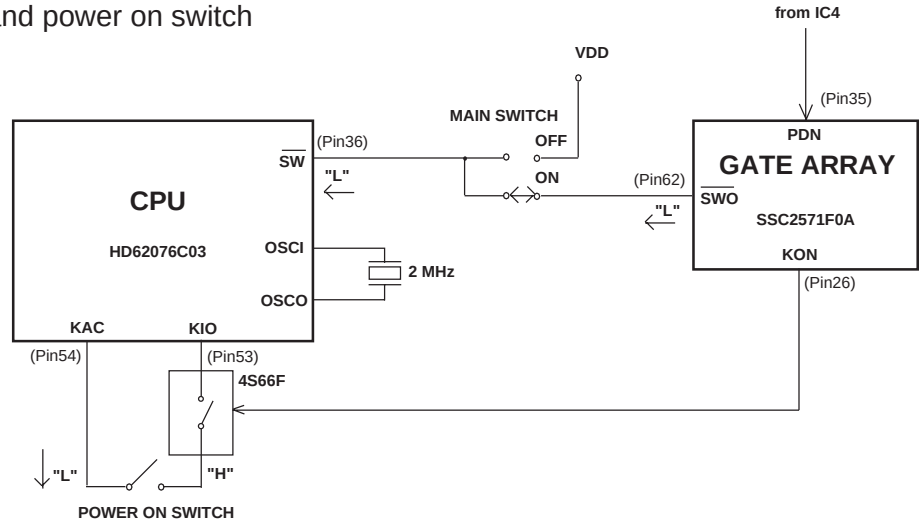
3) How to turn the display ON.

When pressing "ON" key under the ON side of the Main switch , the CPU (LSI1) generates the signal to turn the display ON on the terminal V2ON (Pin No.45).
This signal goes to the terminal VIN (Pin No.24) of the GATE ARRAY (LSI2), then the GATE ARRAY (LSI2) generates "L" level on the terminal VOB (Pin No.28). When the transistor 2SA1179 (Q2) receives "L" level, the transistor 2SC2812 (Q1) will be also turned ON. Then LCD drive voltage V1~V4 will be applied.

4) How to detect the voltage for the main batteries.

When the voltage of the VDD lines becomes +6.6V±0.18V, the terminal OUT (Pin No.1) of the detector RH5V60BA (IC4) becomes "L" level, then this signal goes to the terminal INTO (Pin No.70) of the CPU (LSI1) and the terminal PDN (Pin No.35) of the GATE ARRAY (LSI2).
The CPU detects the low battery condition, then the display turns OFF.

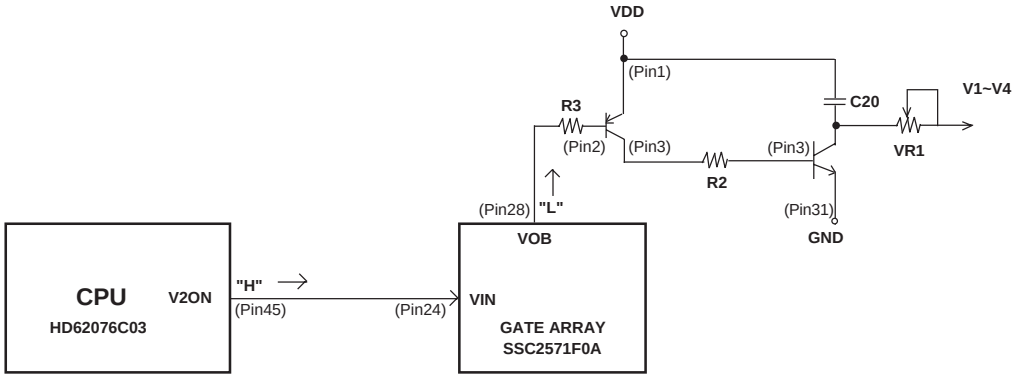
5) Main switch and power on switch



When the main switch is set to on position, $\overline{SW}$ terminal of CPU receives "L", then KAC terminal will be "L" to enable the system power on. The KI0 terminal is "H" when VDD is applied to CPU. Therefore, when pressing the power on switch, CPU will generate a clock pulse (2 MHz) at OSCO terminal for start up the system.

When the PDN terminal will be receiving "L" level, GATE ARRAY will send "L" signal from KON terminal for cutting the line of power on switch.

6) Power supply for LCD



When the system is start up, CPU will send "H" signal to VIN terminal of gate array from V2ON terminal. Then, gate array will send "L" signal from VOB terminal to turn ON the transistors Q2 and Q1 for LCD drive voltages.

CPU pin description (HD62076C03)

Pin No.	Name	In/Out	Status of OFF	Status of ON	Description
1~14,16,17	A0~A15	Out	L	Pulse	Address Bus line
15,39, 100	VSS	In	GND	GND	GND terminal
24	WE	Out	H	Pulse	Write signal
25	OE	Out	H	Pulse	Read signal
26	FE	Out	H	Pulse	Chip select signal for Gate array
27	CS1	Out	H	H	Chip select signal
28	CS2	Out	H	H	Chip select signal
29	CS3	Out	H	Pulse	Chip select signal
30	E0	Out	L	Pulse	Chip enable signal (Not used)
31	E1	Out	L	H	Chip enable signal (Not used)
32	E2	Out	L	H	Chip enable signal (Not used)
33	E3	Out	L	H	Chip enable signal (Not used)
34	BCON	Out	H	H	BCN signal (Not used)
35	MDP2	Out	H	L	MDP signal (Not used)
36	SW	In	L	L	Switch signal (When switches are at ON position)
37	ONMK	In	H	H	Battery detection
38	TEST	In	L	L	TEST terminal (connect to GND)
40,41	OSC O/I	In	L	Pulse	Clock input
42	VDSC	In	L	H	Power input for Clock
43, 91	VDD1	In	H	H	VDD input terminal
44	VDD2	In	H	H	VDD input terminal
45	V2ON	Out	L	H	Power on output signal
46~53	KI7~KI0	In	H	H	Key input signal
54	KAC	Out	L	Pulse	Power on switch signal output
55~65,67	KC0~KC11	Out	H	Pulse	Key common signal output
66	GND	In	L	L	GND terminal
68	INT2	In	H	H	Interrupt signal from Gate array
69	INT1	In	L	H	Interrupt signal for transmission
70	INT0	In	H	H	Interrupt signal for Power down
71	BRK	In	H	H	VDD input terminal
72	P0	Out	H	H	Transmission data output
73	P1	In	L	H	Reception data input
74	P2	In	H	H	Card lock switch input (Not used)
75	P3	In	L	H	IC card detection signal input (Not used)
76	P4	Out	H	Pulse	Not used
77	P5	Out	H	Pulse	Not used
78	P6	In	H	H	Memory back-up battery detection input (Not used)
79	P7	In	H	H	Battery detection input (Not used)
80	H1	Out	H	H	Not used
81	WENL	In	L	L	GND terminal
82	H2	Out	H	H	Not used
83	L1	Out	L	H	Not used
84	L2	Out	L	L	Not used
85	DT	Out	H	Pulse	DT signal output
86	PRO	Out	L	H	LCD driver mode selection signal
87	FR	Out	L	Pulse	LCD driver synchronous signal
88	LP	Out	H	Pulse	LCD driver latch pulse signal
89	GC	Out	H	Pulse	GC signal output
90	DE	Out	H	Pulse	LCD driver data latch clock signal
92~99	IO7~IO0	In/Out	L	Pulse	Data bus line
18~23	RA14~19	Out	L	Pulse	Address line (Not used)

Gate array pin descriptions (SSC2571F0A)

Pin No.	Name	In/Out	Description
1	VSS1	In	GND terminal
2	OSO	Out	Clock out
3	OSI	In	Clock in
4	VL1	In	6V input
5~10	A0~3,A14,15	In	Address input
11	FE	In	Chip select signal from CPU
12	CS1	In	Chip select signal from CPU
13	CS2	In	Chip select signal from CPU
14	CS3	In	Chip select signal from CPU
15	OEI	In	Output enable signal from CPU
16	VSS(GND)	In	GND terminal
17	VH1(VCC)	In	9V input
18	TXI	In	Transmission data input from CPU
19	WEI	In	Write enable signal from CPU
20	GC	In	GC signal from CPU
21	IO0	In/Out	Data bus line
22	DT	In	DT signal input
23	IO1	In/Out	Data bus line
24	VIN	In	Power ON signal from CPU (V2ON)
25	IO2	In/Out	Data bus line
26	KON	Out	Switch control signal
27	IO3	In/Out	Data bus line
28	VOB	Out	Inverted signal for VIN
29	IO4	In/Out	Data bus line
30	INT	Out	Interrupt signal
31	VH2(VCC)	In	9V input
32	VL2(VLL)	In	6V input
33	VSS(GND)	In	GND terminal
34	BBC	Out	Not used
35	PDN	In	Power down detection input
36	IO5	In/Out	Data bus line
37	RLD	Out	Not used
38	RA15	Out	Address bus output
39	IO6	In/Out	Data bus line
40	RA16	Out	Inverted signal for VIN
41	IO7	In/Out	Data bus line
42	RA17	Out	Address bus output
43	RA18	Out	Address bus output
44	MS3	Out	Not used
45	RA19	Out	Not used
46	RA20	Out	Not used
47	R15	Out	Address bus
48	VSS(GND)	In	GND terminal
49	VH3(VCC)	In	9V input
50	VDD1(VLL)	In	6V input
51	R16	Out	Address bus
52	R17	Out	Address bus
53	MSO	Out	Chip enable signal for ROM
54	MS4	Out	Chip select signal for RAM (Not used)
55	MS1	Out	Not used
56	MS5	Out	Not used

Pin No.	Name	In/Out	Description
57	MS2	Out	Not used
58	OEO	Out	Output enable for ROM
59	BZ1	Out	Buzzer signal
60	OTP	In	Connected to GND
61	BZ2	Out	Buzzer signal
62	SWO	Out	Main switch control signal
63	VH4(VCC)	In	9V input
64	TXO	Out	Transmission data output terminal

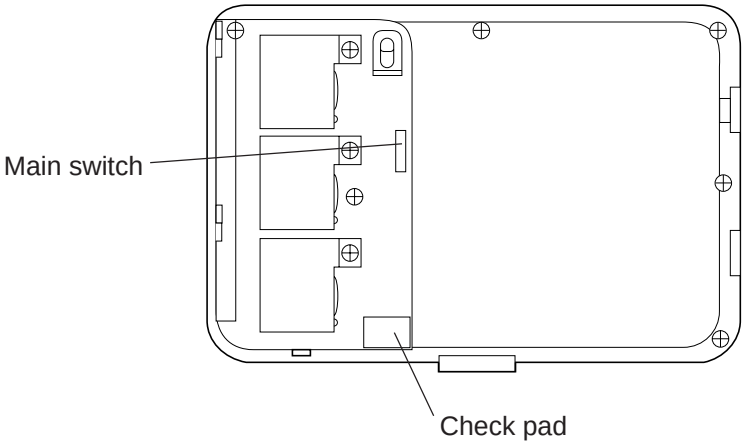
Operation program ROM pin descriptions

Pin No.	Name	In/Out	Status of OFF	Status of ON	Description
2~12,23, 25~30	A0~A17	In	L	Pulse	Address bus line (A0~A14, RA15~RA17)
13~15, 17~21	O0~O7	Out	L	Pulse	Data bus line (IO0~IO7)
16	GND	In	L	L	GND terminal
22	CE	In	H	Pulse	Chip enable signal from Gate array
24	OE	In	L	Pulse	Output enable signal from Gate array
31	PGM	In	L	Pulse	Address line (RA18)
1, 32	VPP, VCC	In	L	H	VDD terminal

RAM pin descriptions

Pin No.	Name	In/Out	Status of OFF	Status of ON	Description
3~12, 23 25~28, 31	A0~A15	In	L	Pulse	Address bus line (A0~A15)
13~15, 17~21	IO0~IO7	Out	L	Pulse	Data bus line (IO0~IO7)
16	GND	In	L	L	GND terminal
22	S1	In	H	Pulse	Chip enable signal from Gate array
24	OE	In	L	Pulse	Output enable signal from Gate array
29	W	In	H	Pulse	Write enable signal from CPU
32	VCC	In	L	H	VDD terminal

DIAGNOSTIC OPERATION




```
SELF TEST PROG.

 PRESS SET


  QUIT BY OFF

CASIO 1993. 11. 09
```

1. Diagnostic mode

The diagnostic mode appears when main switch is turned on while there is a short in the checkpad. After this operation, the machine will beep and display "SELF-TEST".

```
MENU TOP SHEET
 1 : DISP CHECK
 2 : RAM TEST
 3 : MEMORY TEST
 4 : KEY / BUZZER
 5 : INTERFACE

CASIO 1993. 11. 09
```

The menu appears after pressing SET key. Tests are conducted by selecting the mode from the list on screen. The each test can be selected by numeral keys.

DISPLAY TEST : LCD display check
RAM TEST : RAM chip check
MEMORY TEST : ROM/Clock check
KEY/BUZZER : Keys and Buzzer check
INTERFACE : Transmission check

To return to the menu display, press DISP CHNG button .

```
MENU DISPLAY
 1 : LCD ALIGNING
 2 : ALL DOTS ON
 3 : ALTERNATIVE
 4 : REVERSE
 5 : LCD FRAMING

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```

2. Display check

LCD ALIGNING: Lights on dot at corners
ALL DOTS ON : Lights on in all dots (black screen)
ALTERNATIVE : Checker display
REVERSE : Reverse checker display
LCD FRAMING : Lights on dot along the screen edge (frame)

3. RAM check

DISP CHNG key :Return to menu

```
MENU RAM                #1
 1 : DATE WRITE
 2 : DATA READ
 3 : PAT. CHANGE
 4 :
 5 :

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```

DATA WRITE : Write the set pattern to the RAM area
DATA READ : Compare the pattern displayed after # with the write data of RAM and displays the results.
PAT. CHANGE : Change the test data pattern.

#1---Test data pattern(00,01,02...)
#2---Test data pattern(FF,FE,FD....)

1) RAM write

The unit will beep after a second.
The menu will be appeared.

```
RAM WRITING             #1

 NOW EXECUTING!



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```

It means RAM write is succeeded.

2) RAM read

Normal end display is;

```
RAM COMPARE             #1

 COMPLETE!



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```

Error end display is;

```
RAM COMPARE             #1

 DATA ERROR!
ADDRESS     CORR     RAM
  XXXX       XX       XX


CASIO 1993. 11. 09
```

To escape from this message, press DISP CHNG key.

4. ROM/Clock check

```
MENU MEMORY
 1 : CHECK-SUM
 2 : SPECIFIC ADDR
 3 : TIME DISPLAY
 4 :
 5 :

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```

CHECK-SUM : Call up check sum and XOR values for connected ROM.
SPECIFIC ADDR : Call up check sum for certain address.
TIME DISPLAY : Bring up clock display. The present time, date and daily alarm can be set.

1) Check sum

```
CHECKSUM CALC

 TP     SZ      SUM     XOR
C0 0    256     XXXX     XX



CASIO 1993. 11. 09
```

2) Specific address

```
SPECIFIC ADDR

 TP     SZ      SUM     XOR
D0 0    256     XXXX    XX



CASIO 1993. 11. 09
```

3) Time display

```
TIME DISPLAY

  1990-03-00

   10:10  00
XXXXXXXXXXXXXXX

CASIO 1993. 11. 09
```

Input can be made in the line which shows "x" using the numeric keys. Entry of 12 or more digits sets the time and date. Entry of 4 or 6 digits sets the daily alarm. The [ON] key clears current entries.

5. Key/Buzzer check

```
MENU KEY / BZR
 1 : RANDOM
 2 : COMPULSORY
 3 : BEEP
 4 : ALARM NOTE 1
 5 : ALARM NOTE 2

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RANDOM :
The 'key code' will be displayed. The 'key code' is numbered incrementally from left to right with the [DATE] key as "00", and [HOME/WORLD] key as "34" etc. Accordingly, the left cursor key is "40". To release this test, press [SEARCH] key.

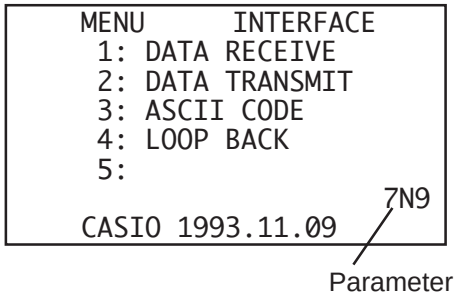
COMPULSORY :
Limits the mode mentioned above so that the keys must be pressed according to the key code. If an error is made, a buzzer sounds for about 1 second. (A correct entry results in a beep tone.)

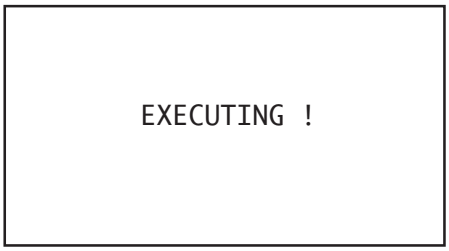
BEEP : Key input sound every 1 second
ALARM NOTE 1 : Sound alarm 1
ALARM NOTE 2 : Sound alarm 2

Pressing of the SEARCH key in either mode will return to the screen of the menu mode.

Sound can be stopped by pressing any key.
While an alarm is sounding the screen display is as shown left. If an irregularity is found in voltage of battery while the alarm is sounding, the alarm will stop. After 256 seconds, the alarm will stop automatically.

6. Interface check





The three charactors that appear on the right side at display represent the parameter. In the case of the example display, it indicates 7 BIT, NON PARITY, 9600 BPS. The operation continues until stopped by pressing the ESC key and then pressing the ON key for all modes.

DISP CHNG key : Return to menu mode

1 key : Transmission mode. The data of transmission is "H" and it is sent out by the data of H34 and H38 by the Xon/Xoff control.

2 key : Reception mode. Make sure to set the parameter to match that of the transitting side. The data received appears on the display.

3 key : Output the following ASCII code by Xon/Xoff control.
!"#*+,-/0123456789:
ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
A line end code is added with each line.

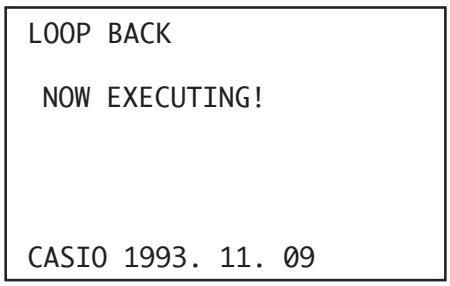
4 key : Loop back test. Short the Tx and Rx terminals for this test. Transmit and check from H20 to H7E. When complete, the message 'CHECK COMPLETE' is displayed.

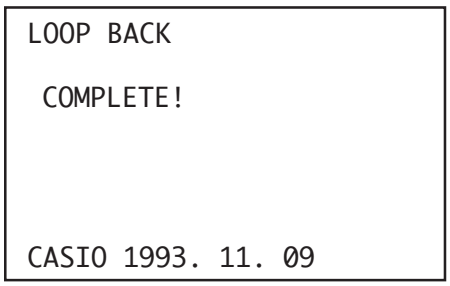
6 key : Switch the data length 7 bit(7) or 8 bit(8)

7 key : Switch the parity bit : NON(N)—EVEN(E) —NON(N) —ODD(O)

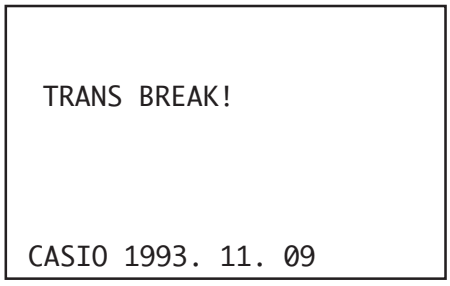
8 key : Switch the transmission speed : 9600(9)—4800(4)—2400(2)—1200(1)

NOTE : As diagnostic program area does not have all ASCII code, to display a reception data, some charactor will be changed to other charactor. For example, a capital letter will be changed to small letter.

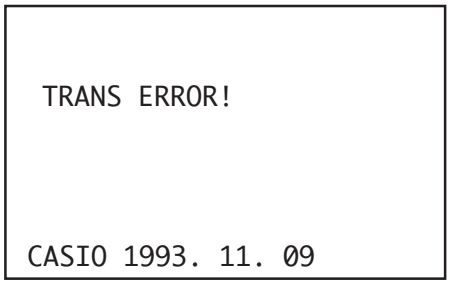




Break display (Broken transmission)



Error display



7. Others

1) When power is off after presetting an alarm time, the unit automatically powered on at the alarm time. However, the display is not reserved in this case.
2) When executing memory sum check, execute the RAM write check before.
3) To release diagnostic mode, press RESET button.
4) The display contrast can be changed by the contrast dial.

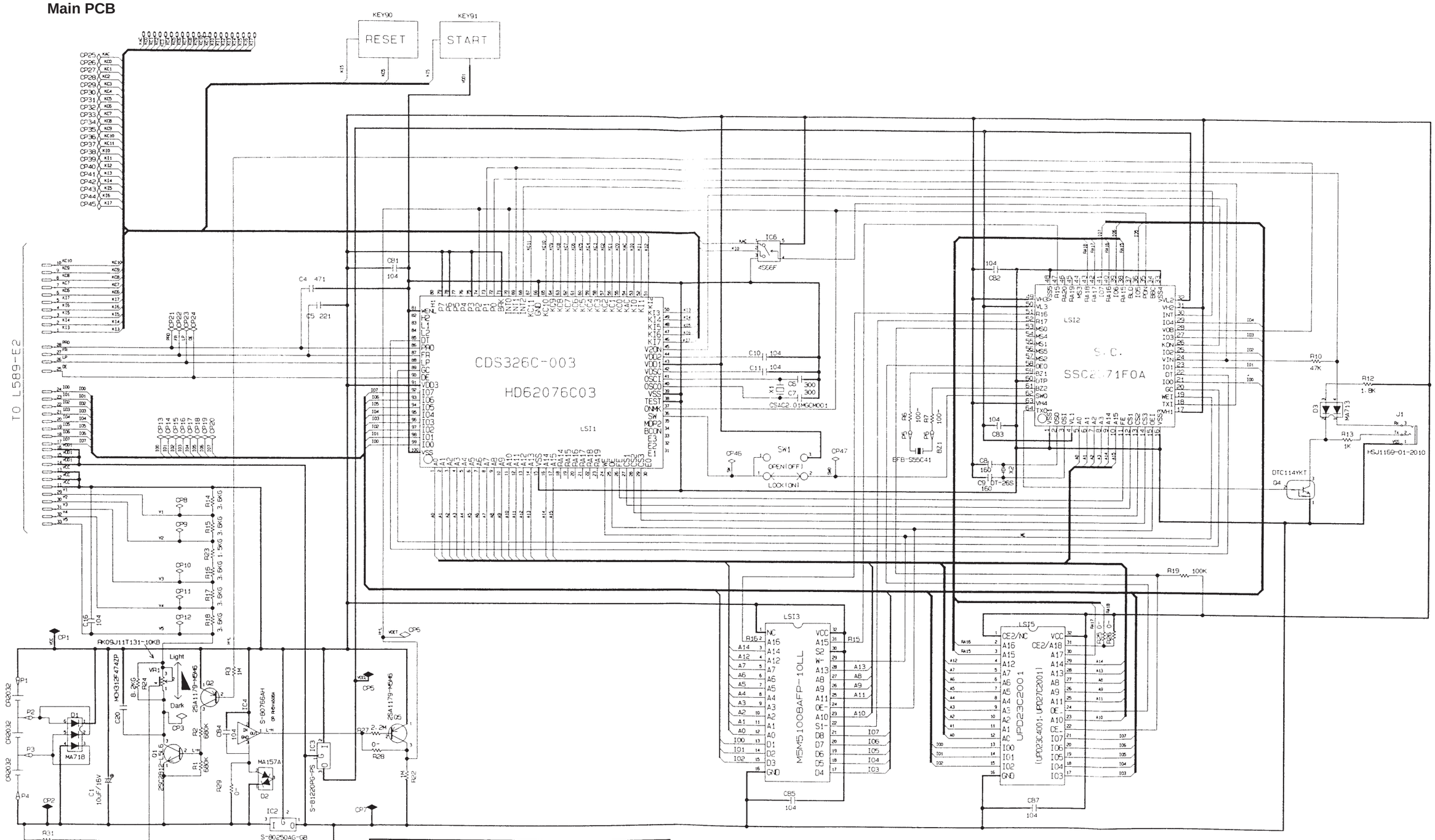
TROUBLESHOOTING

Before the following solutions will be done, save data if possible.

SYMPTOM	CAUSE	SOLUTION
No power	Battery shortage	Replace batteries
	Poor soldering of the power supply circuit	Resolder
	Defective LSI-1 or LSI-2	Replace it
No display at all or wrong display	Defective TAB LSI	Replace it
	Defective heat seal	Replace it
	Defective LCD	Replace it
No key input at all	Poor soldering LSI-1 or LSI-2	Resolder
	Defective LSI-1 or LSI-2	Replace it

SCHEMATIC DIAGRAM

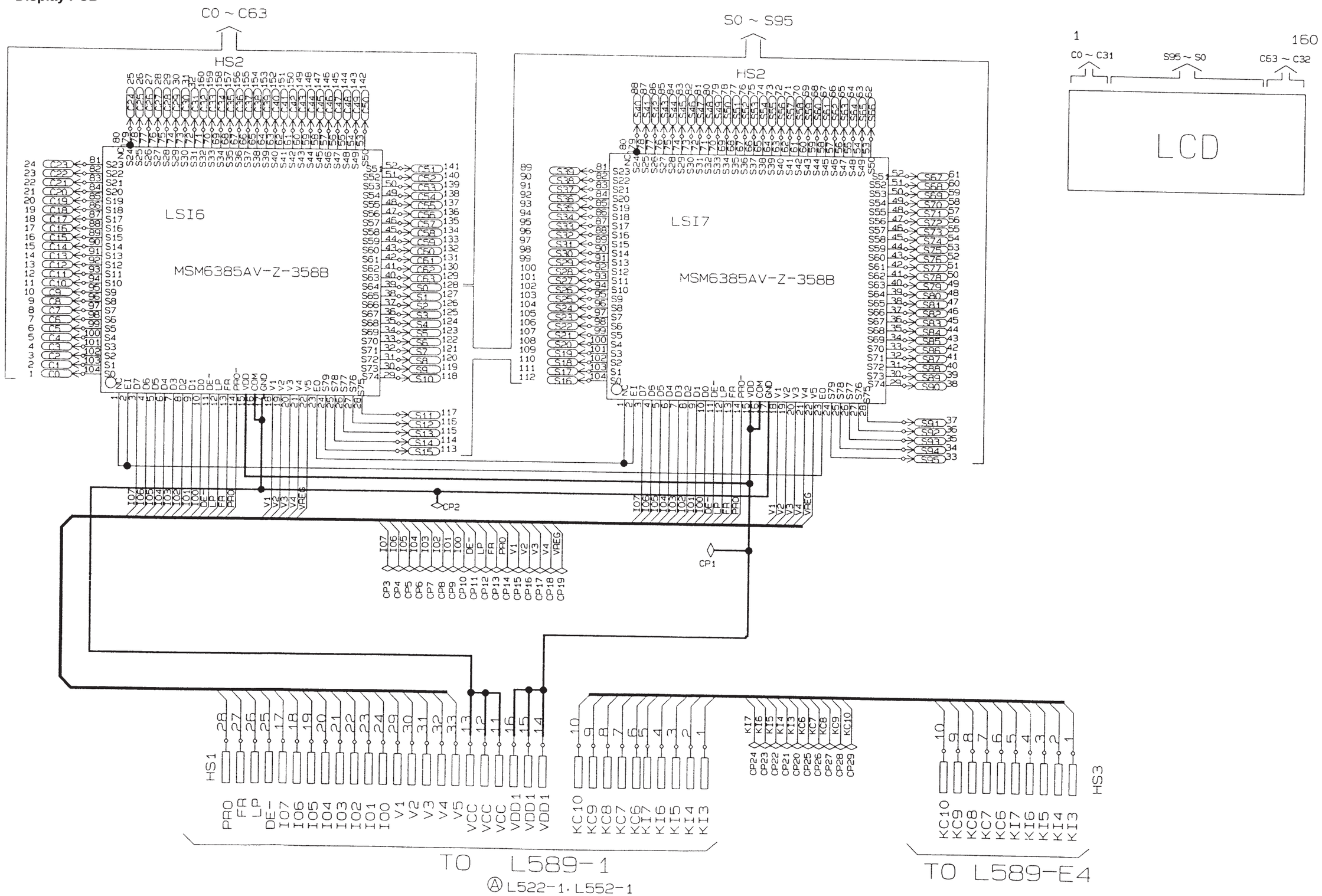
Main PCB



IC4	D2	Q5	R22	R27	R28	R29
S-80766AH	—	O	O	O	—	O
RH5VA60BA	O	—	O	—	O	—

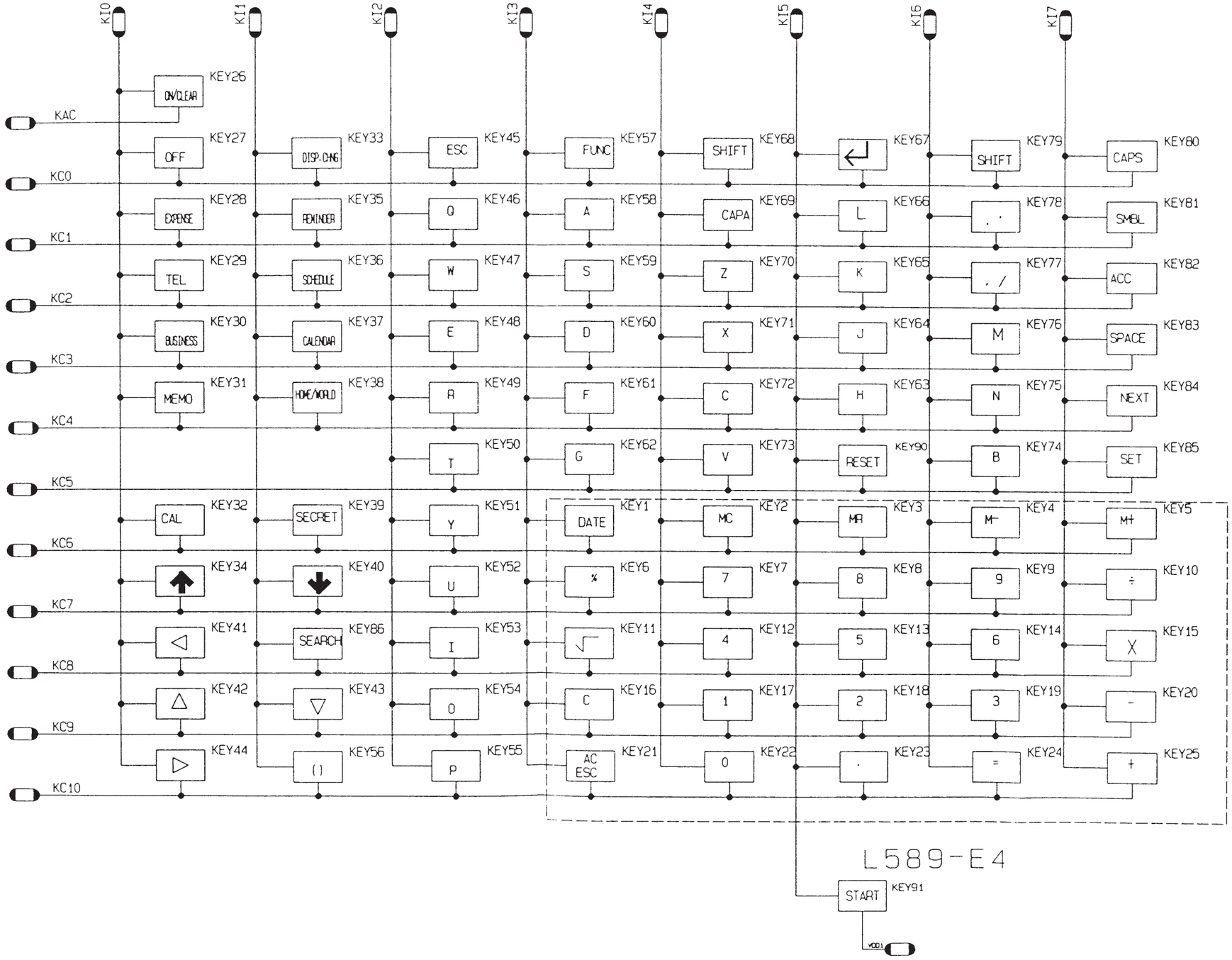
Note: The following parts are not mounted.
C16, R24

Display PCB

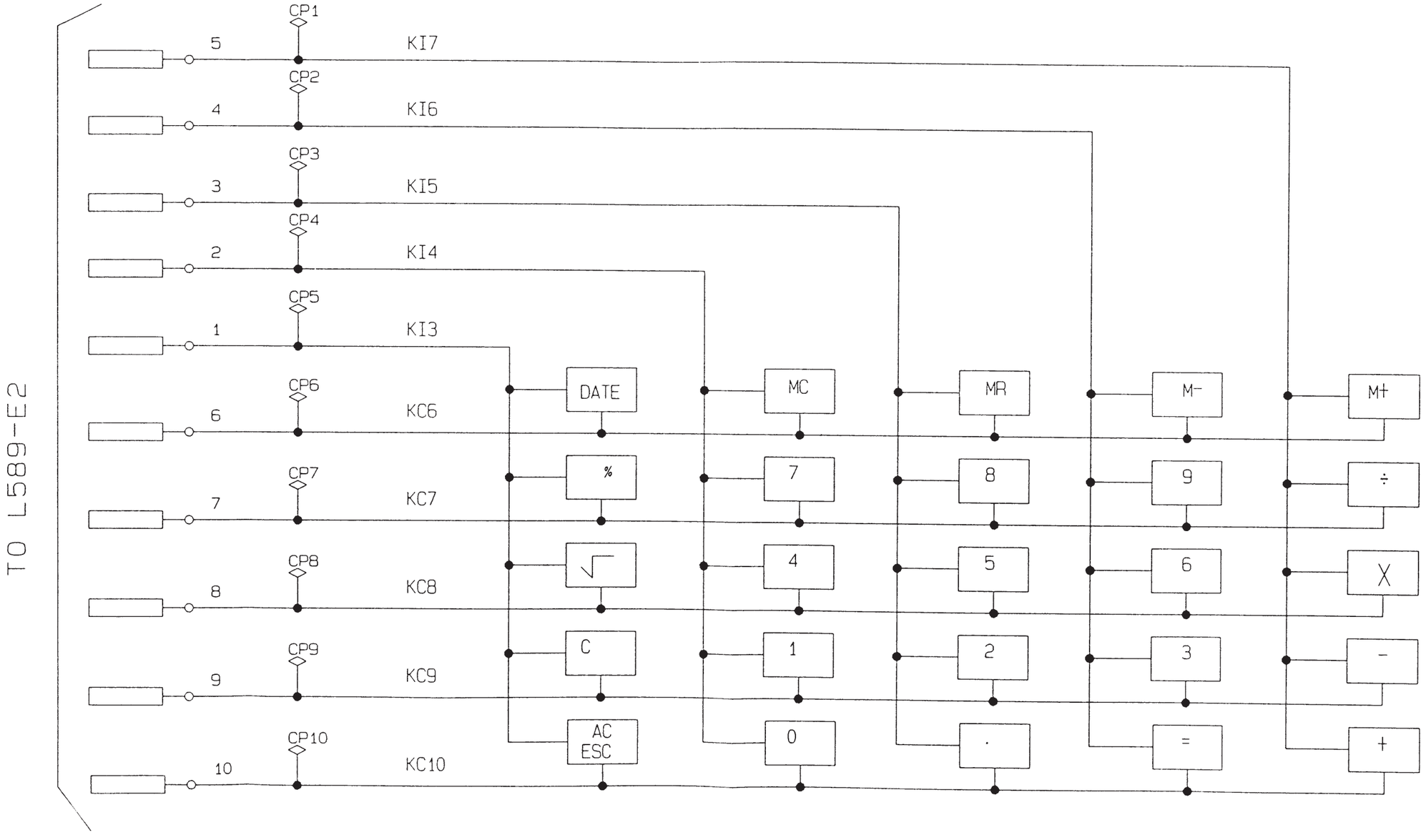

C0 ~ C63
S0 ~ S95
HS2
LSI6
MSM6385AV-Z-358B
LSI7
CP1
CP2
HS1
HS3
TO L589-1
Ⓐ L522-1, L552-1
TO L589-E4

1
160
C0 ~ C31
S95 ~ S0
C63 ~ C32
LCD

Key Matrix


KI0
KI1
KI2
KI3
KI4
KI5
KI6
KI7
KAC
KC0
KC1
KC2
KC3
KC4
KC5
KC6
KC7
KC8
KC9
KC10
KEY26 ON/CLEAR
KEY27 OFF
KEY28 EXPENSE
KEY29 TEL
KEY30 BUSINESS
KEY31 MEMO
KEY32 CAL
KEY34
KEY41
KEY42
KEY44
KEY33 DISP.CHG
KEY35 REMINDER
KEY36 SCHEDULE
KEY37 CALENDAR
KEY38 HOME/WORLD
KEY39 SECRET
KEY40
KEY86 SEARCH
KEY43
KEY56 ( )
KEY45 ESC
KEY46 Q
KEY47 W
KEY48 E
KEY49 R
KEY50 T
KEY51 Y
KEY52 U
KEY53 I
KEY54 O
KEY55 P
KEY57 FUNC
KEY58 A
KEY59 S
KEY60 D
KEY61 F
KEY62 G
KEY1 DATE
KEY6 %
KEY11
KEY16 C
KEY21 AC ESC
KEY68 SHIFT
KEY69 CAPA
KEY70 Z
KEY71 X
KEY72 C
KEY73 V
KEY2 MC
KEY7 7
KEY12 4
KEY17 1
KEY22 0
KEY67
KEY66 L
KEY65 K
KEY64 J
KEY63 H
KEY90 RESET
KEY3 MR
KEY8 8
KEY13 5
KEY18 2
KEY23 .
KEY91 START
VDD
KEY79 SHIFT
KEY78 . .
KEY77 . /
KEY76 M
KEY75 N
KEY74 B
KEY4 M-
KEY9 9
KEY14 6
KEY19 3
KEY24 =
KEY80 CAPS
KEY81 SMBL
KEY82 ACC
KEY83 SPACE
KEY84 NEXT
KEY85 SET
KEY5 M+
KEY10 ÷
KEY15 X
KEY20 -
KEY25 +
L589-E4

Key Matrix (Display side)



I : U.S.A.
II : B.O.S.S.
III : OTHERS

PARTS LIST

N	Item	Code No.	Parts Name	Specification	Quantity I	Quantity II	Quantity III	M	FOB Japan N.R.Yen Unit Price	R
		1.MAIN BOARD								
	LSI1	2011 3843	LSI	HD62076C03	1	1	1	1	720	A
	LSI2	2011 7350	LSI	SSC2571F0A	1	1	1	1	460	A
N	LSI3	2011 9247	IC	TC551001BFL-10L	1	1	1	1	1,330	A
N	LSI5	2011 8778	IC	µPD23C2001EGW-J62	1	1	1	1	490	A
	IC2	2105 2982	IC	S-80250AG-GB-T1	1	1	1	1	100	B
N	IC3	2105 2989	IC	S-81220PG-PS-T1	1	1	1	10	45	B
	IC4	2105 2247	CMOS-IC	RH5VA60BA-T1	1	1	1	5	65	B
	IC6	2105 1141	L-MOS IC	TC4S66F-TE85R	1	1	1	5	39	B
	Q1	2221 0378	Chip transistor	2SC2812-L5, L6-TB	1	1	1	20	12	B
	Q2	2200 4417	Transistor	2SA1179M5, M6-TB	1	1	1	20	15	B
	Q4	2259 0959	Chip digital transistor	DTC114YKT-146	1	1	1	20	12	B
	D1	2390 0847	Chip diode	MA718-(TX)	1	1	1	5	5	B
	D2	2305 1028	Chip diode	MA157-(TX)	1	1	1	10	34	B
	D3	2390 0364	Shottky diode	MA713-(TX)	1	1	1	10	33	B
	X1	2590 0777	Ceramic oscillator	CSAC2.01MGCM001-TC	1	1	1	1	98	B
	X2	7110 0642	Cryatal oscillator	DT-26S	1	1	1	10	57	B
	C1	2803 6813	Capapcitor	CB0011341R3	1	1	1	20	22	C
	C4	2845 2289	Chip capacitor	MCH215C471KK	1	1	1	20	3	C
	C5	2845 1673	Chip capacitor	MCH215A221JK	1	1	1	20	4	C
	C6/7	2845 2499	Chip capacitor	MCH215A300JK	2	2	2	20	3	C
	C8/9	6411 8550	Chip capacitor	CP016F602T3	2	2	2	20	5	C
	C10/11	2845 1540	Chip capacitor	MCH212F104ZK	8	8	8	20	4	C
	CB1~5/7									
	C20	2845 3486	Chip capacitor	MCH312F474ZP	1	1	1	20	21	C
	R1/2	2795 1309	Chip resistor	MCR10EZHJ684	2	2	2	10	9	C
	R3/22	2795 0532	Chip resistor	MCR10EZHJ105	2	2	2	20	3	C
	R6/7	2792 0217	Chip resistor	MCR10EZHJ101	2	2	2	20	3	C
	R10	2792 0462	Chip resistor	MCR10EZHJ473	1	1	1	20	3	C
	R12	2792 1191	Chip resistor	MCR10EZHJ182	1	1	1	10	9	C
	R13/31	2792 0470	Chip resistor	MCR10EZHJ102	1	1	1	20	3	C
N	R14~18	2795 3248	Chip resistor	MCR10EZHG362	5	5	5	20	2	C
	R19	2792 0209	Chip resistor	MCR10EZHJ104	1	1	1	20	3	C
	R23	2795 3339	Chip resistor	MCR10EZHG152	1	1	1	20	3	C
	R26/28	2795 0056	Chip resistor	MCR10EZHJ000	2	2	2	20	3	C
	J1	3501 6538	Jack	HSJ1169-012010	1	1	1	5	56	X
	VR1	6411 8480	Volume	CF10013A008	1	1	1	5	90	C
	1	6411 8490	Battery spring (+)	EF01DB21109	3	3	3	20	12	X
	2	6409 6310	Battery contact plate (-)	EF02DB10100	3	3	3	20	16	X
N	3	6412 8260	CPU board ass'y	DB21AX3100L	1	1	1	1	4,450	B
			(This unit contains the above parts as it's element)							
		2.DISPLAY BOARD								
	LSI6/7	2011 1974	LSI	MSM6385AV-Z-358B	2	2	2	1	370	A
	4	6411 8440	D/D board ass'y	DB21XX3F00M*1	1	1	1	1	940	B
			(This unit contains the above parts as it's element)							
		3.COMPONENT								
N	5	3335 5257	LCD	CD791-TS	1	1	1	1	760	A
	6	6411 6340	Heat seal	FX20P320003	1	1	1	1	200	A

Notes: N – New parts
M – Minimum order/supply quantity
R – Rank
Q – Quantity used per unit

R – A : Essential
B : Stock recommended
C : Others
X : No stock recommended

I : U.S.A.
II : B.O.S.S.
III : OTHERS

N	Item	Code No.	Parts Name	Specification	Quantity I	Quantity II	Quantity III	M	FOB Japan N.R.Yen Unit Price	R
	7	6512 1280	Haet seal	FX200P80074	1	1	1	10	49	B
	8	6512 1230	Heat seal	FX200P60014	1	1	1	1	120	A
	9	6512 1240	Protection tape	HGFC0007409	1	1	1	20	22	B
	10	6411 8470	Protection tape	HGJ00003706	1	1	1	20	22	B
	11	6411 8460	Cushion	FH100027205	2	2	2	20	18	C
	12	6411 8450	Keyboard PCB	DADB21XX301	1	1	1	5	65	X
	13	6408 5920	Switch knob ass'y	DB2AXX4A00M	1	1	1	10	30	C
N	14	6412 8240	Battery cover	FADDB211014	1	1	1	20	27	X
N	15	6412 8250	Battery cover label	HGFC0010507	1	1	1	20	15	X
N	16	6412 8230	Lower case (KB)	FABDB211018	0	0	1	5	95	X
N	16	6413 1450	Lower case (KB)	FABDB211026	1	1	0	5	95	X
	17	6510 4440	Insulation seal	HGFC0001206	4	4	4	20	6	X
	18	6512 1080	Nut	MD100000602	4	4	4	20	13	X
	19	3122 2380	Buzzer	EFB-S55C41A8	1	1	1	10	36	X
	20	6510 4500	Buzzer tape	HGFC0000501	1	1	1	20	17	X
N	21	6412 8200	Upper case (DIS)	FAADB212018	1	1	1	1	68	X
N	22	6412 8210	Upper case (KB)	FAADB211020	1	1	1	1	250	X
N	23	6412 8220	Hinge A	FC0DB061017	1	1	1	20	21	X
	24	6512 1210	Pin	FC002870000	2	2	2	20	9	X
	25	6512 1220	Pin (L)	FC002870018	2	2	2	20	16	X
N	26	6412 8110	Lower case (DIS)	FABDB212014	1	0	1	20	26	X
N	26	6413 1440	Lower case (DIS)	FABDB212022	0	1	0	20	26	X
	27	6409 6120	Battery holder	ECDB1011108	3	3	3	20	26	X
	28	6511 8400	Key contact rubber C	LADB0220105	1	1	1	20	10	C
	29	6411 8250	Knob	FB3DB211007	1	1	1	20	9	X
	30	6411 8260	Key contact rubber (61)	LADB2110005	1	1	1	1	200	C
	31	6411 8270	Key contact rubber (25)	LADB2120001	1	1	1	5	83	C
	32	6511 7160	RB insert	LC120000102	1	1	1	20	17	C
	33	6510 4310	Decoration screw	MAA80006311	3	3	3	20	3	B
	34	6510 4350	Decoration screw	MAA80006302	1	1	1	20	2	B
	35	6512 1000	Screw	MABA0004207	5	5	5	20	3	C
	36	6510 5260	Screw	MAB10032301	3	3	3	20	3	C
	37	6406 8750	Screw	MAB20070302	10	10	10	20	10	C
N	38	6412 8130	Hinge B	FC0DB062013	1	1	1	20	18	X
N	39	6412 8140	Battery insulation	EL4F0002111	1	1	1	20	24	X
N	40	6412 8150	Display plate	EL5F0008201	1	0	1	1	170	B
N	40	6412 8160	Display plate	EL5F0008308	0	1	0	1	170	B
N	41	6410 9680	Mask tape	HGC00001609	1	1	1	20	7	X
N	42	6412 8170	Hinge tape	HGFC0010604	1	1	1	20	22	C
	43	6512 0730	Hinge stopper	EF15DB06102	2	2	2	20	27	X
	44	6411 8370	Screw	MABA0006307	5	5	5	20	3	X
N	45	6412 8180	Alphabet key set	KGDB2110106	1	1	1	1	120	X
N	46	6412 8190	Numeric key set	KCDB2120105	1	1	1	1	120	X

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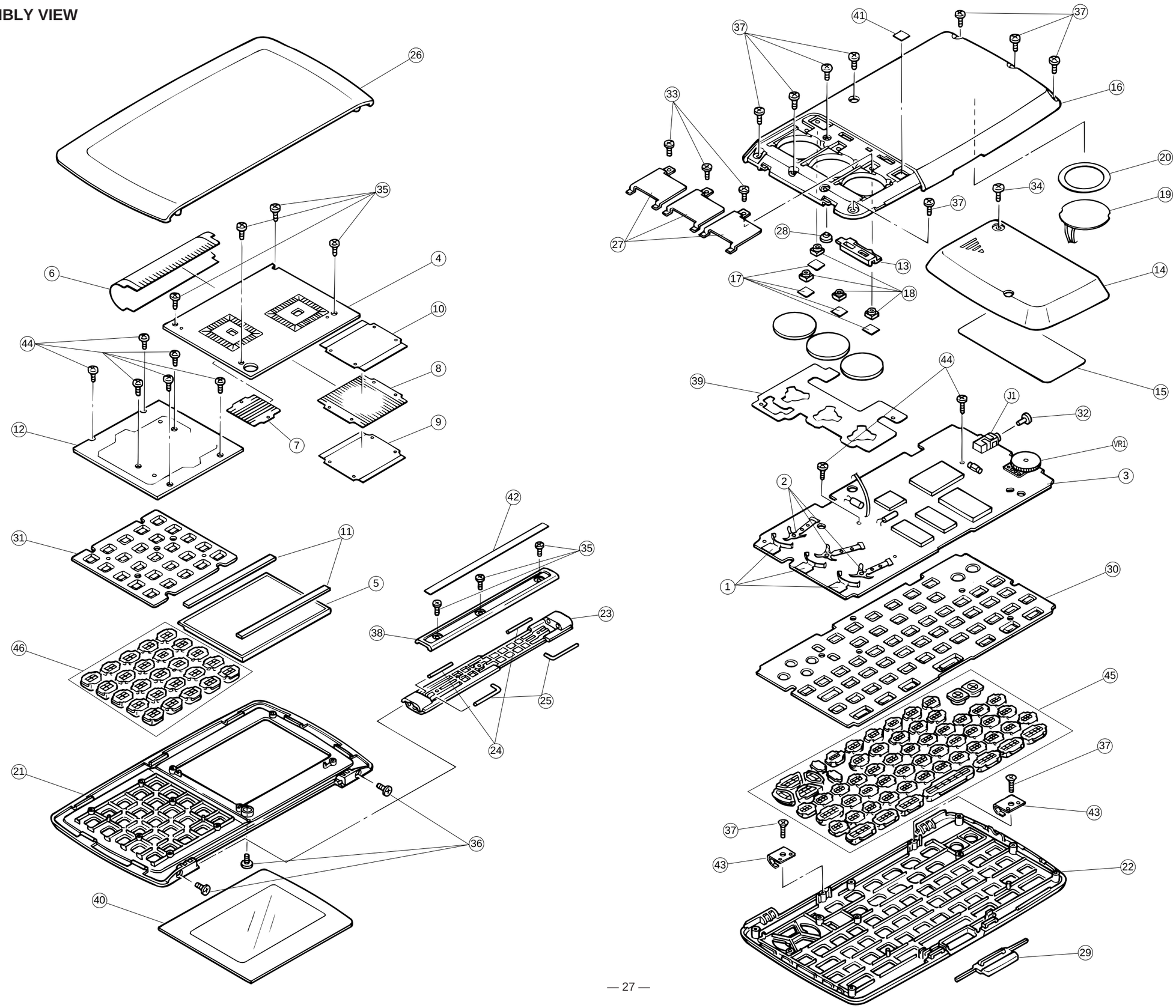
ASSEMBLY VIEW



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